REMARKS/ARGUMENTS

Applicant wishes to thank the Examiner for the courtesy of the interview with Applicant's representative on November 6, 2003. In accordance with the Examiner's request, Applicant is submitting this Response to the Office action dated July 14, 2003 to present the arguments in writing so they may be further considered.

Claims 1 - 15 are pending in this application. In the Office action data July 14, 2003, claims 13 - 15 were allowed and claims 1 - 12 were rejected under 35 U.S.C. § 102 as being anticipated by Shiraishi, U.S. Patent No. 5,903,276. Claim 1 is the sole independent claim in rejected claims 1 - 12.

The Examiner's Rejection of Independent Claim 1

Regarding independent claim 1, the Office Action states, in part, at paragraph 6:

> Shiraishi discloses a method of eliminating unwanted steps at edges in image representations in the line raster, in particular in on-line operation, characterized by the steps:
>
> a) application of an edge operator to a rastered image portion for coarsely ascertaining at least one rastered edge configuration in the rastered image portion (Figure 1 3 Drawing Processing Unit),
>
> b) determining the position of at least a first pixel from the amount of those pixels which form the rastered edge configuration or adjoin said rastered edge configuration (Figure 4, "Each edge of the

polygons defined by these apexes has a X-start point ... a Y-start point ...", column 7, line 13-23)

In response to the arguments Applicant submitted on April 29, 2003, the Office action states, in part, at paragraph 19:

> The Applicant alleges Shiraishi's method performs anti-aliasing during the rendering process which is different from the post-anti-aliasing process of the invention. Examiner notes that in the drawing process unit, rendering of the image (Figure 54 32a, 33a, 34a and 35a) is performed before anti-aliasing processing (Figure 54 36a).

Applicant's Response to the Rejection of Claim 1

Claim 1 recites, in part: "application of an edge operator to a rastered image portion for coarsely ascertaining at least one rastered edge configuration in the rastered image portion" and "determining the position of at least a first pixel from the amount of those pixels which form the rastered edge configuration or adjoin said rastered edge configuration." Thus, the edge operator is applied to a rastered image so that an edge in the rastered image may be ascertained from pixels in the rastered image.

In contrast, Shiraishi discloses a conventional polygon rendering process whereby edges of polygons are ascertained from data that defines the apexes of the polygons. As discussed below, the use of apex information disclosed in Shiraishi is entirely different than the claimed method.

First, in Shiraishi the apex information is used by the rendering process that generates a rastered image. As such, the apex information is created before the rastered image is generated.

Second, in Shiraishi an edge of the polygon is ascertained from the apexes. For example, apex information may define the location (x,y,z) and the color (RGB) of each apex of the polygons. As discussed below, the specification of Shiraishi discloses that polygon edge information used by the Shiraishi system is obtained from this apex information.

Figure 3 in Shiraishi depicts the drawing processing unit the Examiner contends discloses "application of an edge operator to a rastered image portion." Reference to the portion of the specification that describes the components of Figure 3 shows, however, that the drawing processing unit obtains edge information from polygon apex information. Column 7, line 12 - column 8, line 32 describes several of the operations of the polygon extracting unit 32, the edge storing table 33 and the parameter calculating unit 34 depicted in Figure 3:

> The polygon extracting unit 32 receives X, Y, and Z coordinates, colors, attributes, etc., of the apexes of the polygons from the interface 31. Each edge of the polygons defined by these apexes has an X-start point (X coordinate of the start point) Xs, a Y-start point (Y coordinate of the start point) Ys, X-end point (X coordinate of the end point) Xe, and a Y-end point (Y coordinate of the end point) Ye.
> Column 7 at lines 12 - 20.

FIG. 10 is an illustrative drawing showing a data format of the edge storing table 33. As shown in the figure, right edges and left edges are stored separately in the edge storing table 33.
Column 7 at lines 62 - 65.

The parameter calculating unit 34 also receives data from the edge storing table 33 and the horizontal table 37. A detailed description of the horizontal table 37 will be provided later.

The parameter calculating unit 34 calculates slopes of the right edges and the left edges of the polygons, and calculates slopes of Z values at intersections of a scan line with the right edges and the left edges. These slopes are used as parameters in the DDA (digital differential analysis) by the DDA calculating unit 35.
Column 8 at lines 26 - 33.

In paragraph 19 of the Office action, the Examiner cites Figure 54 as disclosing anti-aliasing 36a after rendering of the image. However, the operations performed by the anti-aliasing 36a are not the claimed operations. As the disclosure at column 28, lines 1 - 34 shows, the anti-aliasing 32a uses polygon apex-based information as discussed above in conjunction with Figure 3:

> The anti-aliasing processing unit 36a also receives left-edge X values and right-edge X values on an odd-number line and on an even-number line from the parameter calculating unit 34a.
>
> Furthermore, the anti-aliasing processing unit 36a receives the leftmost left-edge-X-value XL and the rightmost right-edge-X-value XR of a current line and the leftmost left-edge-X-value BXL and the rightmost right-edge-X-value BXR of a previous line to carry out edge determination and assignment of an anti-aliasing direction.
>
> Column 28, lines 8 - 12 and 19 - 24.

The anti-aliasing 32a uses the edge information to set a "direction of anti-aliasing":

> When a current X value is between XL and BXL, it can be known that an edge being processed is a left polygon edge. Thus, the direction of the anti-aliazing is set to that of the left edge. When a current X value is between XR and BXR, it can be known that an edge being processed is a right polygon edge. Thus, the direction of the anti-aliasing is set to that of the right edge. The RGB values, the area size, and the direction of the anti-aliasing are sent to the frame-memory controlling unit 38a.
>
> Column 28, lines 25 - 34.

From the above, it is apparent that Shiraishi does not teach or disclose "ascertaining an edge configuration from the rastered image" or "ascertaining at least one rastered edge

configuration in the rastered image portion" as claimed in claim 1. Thus, Applicant submits that independent claim 1 and claims 2 - 12 that depend on claim 1 are not anticipated by nor obvious in view of the cited references.

Conclusion

For the foregoing reasons, Applicant submits that all claims are allowable over the cited references. Accordingly, Applicant respectfully requests allowance of this application. If there are any remaining issues regarding the rejection of the claims over Shiraishi, Applicant requests that the Examiner contact the undersigned at the number indicated below.

Respectfully submitted,
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